ADVANCE PROGRAM

1999 IEEE Radio and Wireless Conference

Denver Marriott Southeast

Denver, Colorado, USA

August 1-4, 1999

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Dr. Roger B. Marks, *National Institute of Standards and Technology*

Technical Program Chair:
Dr. Michael S. Heutmaker, *Lucent Technologies*

1999 IEEE Radio and Wireless Conference

MONDAY, AUGUST 2, 1999

Opening Remarks
1:00 PM
Keynote (details on insert)
1:20 PM - 1:50 PM
The Regulatory Challenges of New Wireless Technologies: Ultrawideband and Software Defined Radios
Dale Hatfield, *Chief, Office of Engineering and Technology, U.S. Federal Communications Commission*

Session M1
Broadband Wireless Systems
1:50 PM - 3:30 PM
Chair: David Smithgall, *Lucent Technologies*

Radio Aspects of a Stratospheric Broadband Wireless System (Invited)
Y.C. Lee, Elena Novakoskaia, *Sky Station International, Washington DC, USA*

Impact of Tuner/Amplifier Limitations on Modem Design for Broadband Wireless Links (Invited)
Bruce Cochran, Ron McCallister, John Liebetreu, *SiCOM, Inc., Scottsdale, AZ, USA*

Simulations of Channel Capacity and Frequency Re-Use in Multipoint LMDS Systems
Harry R. Anderson, *EDX Engineering Inc, Eugene, OR, USA*

Assessment of Cochannel Interference in the Fixed Wireless Cellular Systems
Shayan Farahvash, Mohsen Kavehrad, *Pennsylvania State University, Electrical Engineering Department, University Park, PA, USA*

Break 3:30 PM - 4:00 PM

Session M2
Smart Antennas and System Performance
4:00 PM - 5:10 PM
Chair: Peter Staecker

System Aspects of Smart Antenna Technology in Cellular Wireless Communications (Invited)
Adrian O. Boukalov, Sven-Gustav Häggman, *Communications Laboratory, Helsinki University of Technology, Helsinki, Finland*

Multibeam Antenna With Decision-Feedback Equalization for Home Wireless Communications
Kuo-Hui Li, Mary Ann Ingram, *Georgia Institute of Technology, School of Electrical and Computer Engineering, Atlanta, GA, USA;* Ekkehart Otto Rausch, *Georgia Institute of Technology, Sensors and Electromagnetic Applications Laboratory, Atlanta, GA, USA*

The Performance of a Wireless LAN Access Node Using Antenna Beamforming to Serve Dynamic and Static Users
Cynthia E. Anderson, Mark A. Wickert, *University of Colorado at Colorado Springs, ECE Department, Colorado Springs, CO, USA*

Monday Poster Session M3 (see insert)
5:30 PM - 7:00 PM

TUESDAY, AUGUST 3, 1999

Session T1
System Performance and Optimization
8:00 AM - 9:20 AM
Chair: Timothy Brown, *University of Colorado* (tentative)

System Optimization with Active Power Control During High Traffic in Cellular CDMA
Asim Qureshi, *AirTouch Cellular, Irvine, CA, USA*; Rajendra Kumar, *California State University, Department of Electrical Engineering, Long Beach, CA, USA*

Antenna Downtilt Effects on CDMA Cell-Site Capacity
Scott C. Bundy, *U S WEST Advanced Technologies, Boulder, CO, USA*

Adaptive-Type and -Rate Modulation and Channel Coding Tradeoffs for Speech Communication
John E. Kleider, *Motorola, Systems Solutions Group, Scottsdale, AZ, USA*

Turbo Product Codes for LMDS
Eric Hewitt, *Advanced Hardware Architectures, Inc., Pullman, WA, USA*

Break, 9:20 AM - 9:50 AM

Session T2
Software Radios and Signal Processing
9:50 AM - 11:30 AM
Chair: Kari-Pekka Estola, *Nokia Research Center*

Adaptive Spectrum Exploitation Using Emerging Software Defined Radios
Chad Bergstrom, Scott Chuprun, *Motorola Systems Solutions Group, Wireless Information Technology, Scottsdale, AZ, USA*

Emerging Software Defined Radio (SDR) Architectures Supporting Wireless High Data Rate OFDM
Jeffrey S. Chuprun, John E. Kleider, Chad S. Bergstrom, *Motorola Systems Solutions Group, Scottsdale, AZ, USA*

Waveform Synthesis for Transmission of Complex Waveforms
Matthew L. Welborn, John C. Ankcorn, *MIT Lab for Computer Science, Cambridge, MA, USA*

Nonlinear Equalization of Propagation-Path Delay Distortion in the Frequency Domain (MLSpE: Maximum Likelihood Spectrum Estimation)
Masami Akaike, *Science University of Tokyo, Department of Electrical Engineering, Tokyo, Japan*

Frequency Domain Reciprocal Modulation
Thomas H. Williams, *Holtzman, Inc., Longmont, CO, USA*

Lunch, 12:00 Noon - 1:00 PM

Session T3
System Architecture and Networking
1:00 PM - 3:00 PM
Chair: Modest Oprysko, *IBM* (tentative)

Soft Handoff on the Paging Channel in cdma2000
Sandip Sarkar, Ragulan Sinnarajah, *Qualcomm Inc., San Diego, CA, USA*

WWW Service in 3G Wireless CDMA Systems
Ning Guo, *Nortel Networks, Ottawa, Ontario, Canada*

A Dynamic Channel Assignment Scheme With Two Thresholds for Load Balancing in Cellular Networks
Jaegil Kim, Taegyu Lee, Chong-Sun Hwang, *Korea University, Department of Computer Science & Engineering, Seoul, Korea*

Dynamic Channel Assignment in Shotgun Cellular Systems
Timothy X. Brown, *University of Colorado, Boulder, CO, USA*

A Spectral Overlay for High-Speed Data on Cellular & PCS Infrastructures
Beverly Waldorf, *NextNet, Inc., Minneapolis, MN, USA*

Aspects of the GPRS RLC/MAC Protocol Over a MEO Satellite System
A. Koutsaftiki, P. Lane, J. J. O'Reilly, *University College London, Electronic & Electrical Engineering Department, London, UK*

Break, 3:00 PM - 3:30 PM

Session T4
Propagation Modeling and Measurement
3:30 PM - 4:50 PM
Chair: Roger Dalke, *Institute for Telecommunication Sciences*

Accelerated Ray Optical Propagation Modeling for the Planning of Wireless Communication Networks
R. Hoppe, G. Wölfle, F. M. Landstorfer, *University of Stuttgart, Institut für Hochfrequenz-technik, Stuttgart, Germany*

Delay Profile Measurement System for Microwave Mobile Communications and Delay Characteristics in an Urban Environment
Takehiko Kobayashi, Hironari Masui, Satoshi Takahashi, Koichi Takahashi, Kouzou Kage, *YRP Key Tech Labs, Yokosuka, Japan*

Rigorous EM Modeling of Cars and Airplanes
Branislav M. Notaros, Miroslav L. Djordjevič, Branko D. Popovič, *University of Belgrade, Department of Electrical Engineering, Belgrade, Yugoslavia*; Zoya Popovič, *University of Colorado, Department of Electrical & Computer Engineering, Boulder, CO, USA*

Vector Propagation Channels for Smart Antenna Systems: Statistical Properties of Spatial Signature Variation in Outdoor Environments
Adnan Kavak, Murat Torlak, Guanghan Xu, *University of Texas, Department of Electrical & Computer Engineering, Austin, TX, USA*; Wolfhard J. Vogel, *University of Texas, Electrical Engineering Research Lab, Austin, TX, USA*

Tuesday Poster Session T5 (see insert)
5:30 PM - 7:00 PM

WEDNESDAY, AUGUST 4, 1999

Session W1
Antenna Design and Characterization
8:00 AM - 9:20 AM
Chair: Takehiko Kobayashi, *YRP Key Technologies Laboratory*

A Broadband Uniplanar Quasi-Yagi Active Array for Power Combining
W. R. Deal, James Sorr, Y. Qian, T. Itoh, *University of California, Los Angeles, Department of Electrical Engineering., Los Angeles, CA, USA*

Circular Polarized Aperture Coupled Patch Antennas for an RFID System in the 2.4 GHz ISM Band
Marcel Kossel, Hansruedi Benedickter, Werner Baechtold, *Swiss Federal Institute of Technology (ETH), Laboratory for Electromagnetic Fields and Microwave Electronics, Zürich, Switzerland*

Reduced-Size, Folded Ground Plane for Use With Low-Profile, Broadband Monopole Antennas
James McLean, Heinrich Foltz, *The University of Texas-Pan American, Department of Electrical Engineering, Edinburg, TX, USA*

A Comparison of 920 MHz Diversity Gain Using Horizontally and Vertically Spaced Antenna Elements
P. Wilson, P. Papazian, M. Cotton, Y. Lo, *Institute for Telecommunication Sciences, Boulder, CO, USA*

Break, 9:20 AM - 9:50 AM

Session W2
Passive Device Technology
9:50 AM - 12:00 Noon
Chair: Charles Hodges, *Flextronics, Inc.*

Micromachined High-Q Resonators, Low-Loss Diplexers and Low Phase-Noise Oscillators for a 28 GHz Front-End (Invited)
Andrew Brown, Gabriel M. Rebeiz, *The University of Michigan, Ann Arbor, MI, USA*

EM Simulation of MCM-D Implementation of PA With Integrated Passive Components
R. F. Milsom, N. J. Pulsford, M. de Samber, A. Boogaard, *Philips Research Laboratories, Redhill Surrey, UK*

Integrated Microwave Structures Using an Advanced Thick-Film Technology
Peter Barnwell, *Heraeus Inc., Cermalloy Division, West Conshohocken, PA, USA*
Charles Free, *Middlesex University, London, UK*
Colin Aitchison, Ian Robertson, *University of Surrey, Surrey, UK*

Investigation of Q Enhancement for Inductors Processed in BiCMOS Technology
Yi-Jan E. Chen, Deukhyoun Heo, Joy Laskar, *Georgia Institute of Technology, School of Electrical & Computer Engineering, Atlanta, GA, USA*; Thomas Anderson, *National Semiconductor Corporation*

Interconnection Parasitic Effects on Optical Comunication Circuit Performances
N. Hassaïne, F. Concilio, L. Zakaïb, *Harris Corporation, Communication Sector, Dollard-Des-Ormeaux, Qc, Canada*

A Rigorous Experimental Characterization of Ferrite Inductors for RF Noise Suppression
Krishna Naishadham, *Wright State University, Department of Electrical Engineering, Dayton, OH, USA*

Lunch, 12:00 Noon - 1:00 PM

Session W3
RFIC Technology
1:00 PM - 2:50 PM
Chair: Joseph Staudinger, *Motorola SPS*

CMOS RF Receiver Design for Wireless LAN Applications (Invited)
Behzad Razavi, *University of California, Los Angeles, CA, USA*

SiGe BiCMOS Technology for RF Device and Design Applications
D. C. Ahlgren, N. King, G. Freeman, R. Groves, S. Subbanna, *IBM Microelectronics, Hopewell Junction, NY, USA*

A Novel Design Approach of GHz CMOS Low Noise Amplifier
Xiaopeng Li, Hong-Sun Kim, Mohammed Ismail, *The Ohio State University, Dept. of Electrical Engineering, Columbus, OH, USA*

A Phase Interpolation Direct Digital Synthesizer with an Adaptive Integrator
Akihiro Yamagishi, Tsuneo Tsukahara, *NTT Telecommunication Energy Labs, Kanagawa, Japan*; Hideyuki Nosaka, Masahiro Muraguchi, *NTT Network Innovation Laboratories, Japan*

A Very Low Spurious Frequency Doubler Module for Local Oscillators
Yo Yamaguchi, Hideyuki Nosaka, Masahiro Muraguchi, Akihiro Yamagishi, *Wireless Systems Laboratory, NTT Network Innovation Laboratories, Kanagawa, Japan*

Break, 2:50 PM - 3:20 PM

Session W4
RF Power Amplifiers
3:20 PM - 4:40 PM
Chair: Gene Tkachenko, *Alpha Industries*

Power Amplifier Technologies for Emerging Air Interface Standards
Raymond S. Pengelly, *Raytheon Commercial Electronics, Andover, MA, USA*

800 MHz Power Amplifier Using Envelope Following Technique
J. Staudinger, B. Gilsdorf, D. Newman, G. Norris, G. Sadowniczak, R. Sherman, T. Quach, V. Wang, *Motorola, Semiconductor Products Sector, Tempe, AZ, USA*

Highly Efficient 2.2-GHz Si Power MOSFETs for Cellular Base Station Applications
M. Morikawa, M. Ito, N. Machida, S. Yamada, S. Kudo, S. Shimizu, I. Yoshida, *Hitachi Ltd., Semiconductor & IC Div., Kokubunji, Tokyo, Japan*; K. Nakura, *Hitachi Tobu Semiconductor, Takasaki, Gunma, Japan*

Watt Level GaAs PHEMT Power Amplifiers 26 GHz and 40 GHz for Wireless Applications
Emilio A. Sovero, Don S. Deakin, John Hong, *Rockwell Science Center, Thousand Oaks, CA, USA*; Youngwoo Kwon, *University of Seoul, Seoul, Korea*

Poster/Exhibition Reception and Banquet

Monday, August 2, 1999
5:30-9:30 pm

On Monday Evening, please join us from 5:30-7:00 pm for a welcome reception, held in conjunction with our Monday session of Poster Paper Presentations and the opening of the RAWCON'99 Exhibition of wireless products and services. At 7:00 pm, we will proceed to the elegant RAWCON'99 Banquet, followed by the Broadband Wireless Access Operator's Forum at 8:30.

MONDAY POSTER SESSION M3

5:30 PM - 7:00 PM
Chair: Mohammad Shakouri, *Lucent Technologies* (tentative)

M3.1 Radio System Design for Broadband Access
David Steer, Graham Dolman, Paul Row, *Nortel Networks, Wireless Technology Laboratories, Ottawa, Ontario, Canada*

M3.2 Millimeter-Wave Universal Test Bed (MUTB) for High Speed Communications Systems: System Architecture and Measurements
Yong-Hoon Kim, Ki-Seok Yang, *Kwangju Institute of Science and Technology, Kwangju, Korea*

M3.3 Development of High Speed Ethernet-Based Wireless Access System (EWA) for the 5 GHz Band
Masataka Iizuka, Tetsu Sakata, Masato Mizoguchi, Takeo Ichikawa, Masahiro Morikura, *NTT Access Network Service Systems Laboratories, Yokosuka, Kanagawa, Japan;* Hitoshi Takanashi, *NTT Multimedia Communications Laboratories, Palo Alto, CA, USA*

M3.4 Adaptive LMS Filter Receiver for a Turbo Coded CDMA System
Sabera Kazi, *Honeywell Technology Center, Minneapolis, MN, USA*; Lori Lucke, *Minnetronix, Inc., St. Paul, MN, USA*

M3.5 Mobile Positioning in CDMA Cellular Networks
Erol Hepsaydir, *Hutchison Telecoms, Sydney, St. Leonards, NSW, Australia*

M3.6 A Novel Multipath Diversity Scheme in TDD-CDMA Systems
Ji-Bing Wang, Ming Zhao, Shi-Dong Zhou, Yan Yao, *Tsinghua University, State Key Lab on Microwave & Digital Communications, Beijing, P. R. China*

M3.7 The Impact of Building Database Resolution on Predicted LMDS System Performance
Harry R. Anderson, *EDX Engineering Inc., Eugene, Oregon, USA*

M3.8 Mobile Ranging With Low Accuracy Clocks
Dennis McCrady, Lawrence Doyle, Howard Forstrom, *ITT Industries, Aerospace/Communications Division, Clifton, NJ, USA*

M3.9 Performance of an Optical CDMA System with Turbo Code
Jin Young Kim, *Princeton University, Information Science & System Lab, Princeton, NJ, USA*

M3.10 Packaging, Amplifier and Antenna Technologies for Ka-band Broadband Satellite Communications Systems
Ron Vidano, David Self, Warren Seely, Ken Brice-Heames, Hugh Malone, *Motorola Satellite Communications Group, Tempe, AZ, USA*

M3.11 Optimization of Wireless Network Protocols Using Real-Time Predictive Propagation Modeling
Ratish J. Punnoose, Daniel D. Stancil, Pavel V. Nikitin, *Carnegie Mellon University, Electrical and Computer Engineering Department, Pittsburgh, PA, USA*

M3.12 Generation of Correlated Rayleigh Fading Envelopes for Spread Spectrum Applications
Balasubramaniam Natarajan, Carl R. Nassar, V. Chandrasekhar, *Colorado State University, Department of Electrical & Computer Engineering, Fort Collins, CO, USA*

M3.13 A Transmission Diversity System with Convolutional Coding in Time Division Duplex DS-SS
Incheol Jeong, Masao Nakagawa, *Keio University, Department of Electrical Engineering, Kanagawa, Japan*

M3.14 Subspace Based Decision Feedback Equalization
Parthapratim De, Jay Bao, Tommy Poon, *Mitsubishi Electric Information Technology Center America, New Providence, NJ, USA*

M3.15 Trial Systems for Evaluating a Wireless Ad-Hoc Community Network
Koichi Gyoda, Makoto Kawai, *ATR Adaptive Communications Research Laboratories, Kyoto, Japan*

RAWCON'99 Keynote Address

Monday, August 2, 1999
1:20-1:50 pm
The Regulatory Challenges of New Wireless Technologies: Ultrawideband and Software Defined Radios
Dale Hatfield
Chief, Office of Engineering and Technology, U.S. Federal Communications Commission

Mr. Hatfield will begin by reviewing the role of the Office of Engineering and Technology at the Federal Communications Commission and then discussing the importance of wireless communications, and fixed wireless access in particular, in achieving the goals set forth in the Telecommunications Act of 1996. Following this introduction, he will discuss several recent actions that the Commission has taken to facilitate wireless competition.

In the balance of his remarks, Mr. Hatfield will address specific, longer-term technological developments that present especially interesting challenges and opportunities from a regulatory perspective. These two developments include ultrawideband radio systems and software defined radios. In both cases, the speaker will discuss the opportunities and challenges in the context of the need to encourage more intensive use of the radio spectrum resource. More intensive use is needed in order to accommodate (a) the growth in the number of users of the resource, (b) the greater bandwidth requirements per user, and (c) entirely new uses of the radio spectrum.

RAWCON 99

Poster/Exhibition Reception

Tuesday, August 3, 1999
5:30-7:00 pm

On Tuesday Evening, please join us from 5:30-7:00 pm for a reception, held in conjunction with our Tuesday session of Poster Paper Presentations and the finale of the RAWCON'99 Exhibition of wireless products and services. At 7:00 pm, we will proceed to the Panel Session "Wireless Standardization: Players, Stakes, and Opportunities."

TUESDAY POSTER SESSION T5

5:30 PM - 7:00 PM
Chair: Lutfi Albasha, *Sony Semiconductor Europe*

T5.1 EM Simulations for Radio and Wireless on a PC
Branislav M. Notaros, Branko D. Popovič, *University of Belgrade, Department of Electrical Engineering, Belgrade, Yugoslavia*; Zoya Popovič, *University of Colorado, Department of Electrical & Computer Engineering, Boulder, CO, USA*

T5.2 Full-Wave Study on the Accuracy of Ray-Tracing for Multipath Environments
K. A. Remley, A. Weisshaar, *Oregon State University, Department of Electrical & Computer Engineering, Corvallis, OR, USA*; H. R. Anderson, *EDX Engineering, Inc, Eugene, OR, USA*

T5.3 The Asymptotic Reduction of PO Surface Integral
Ken-ichi Sakina, Makoto Ando, *Tokyo Institute of Technology, Department of Electrical & Electronic Engineering, Tokyo, Japan*

T5.4 Time Variability of the Local Multi-Point Distribution Service Radio Channel
Peter Papazian, Yeh Lo, *Institute for Telecommunication Sciences, Boulder, CO, USA*

T5.5 Array Control Systems Using a Frequency-Shifted Feedback Cavity
Steve Shattil, *Idris Communications Inc., Boulder, CO, USA*

T5.6 A Tunable Low Power BiCMOS Continuous-Time G_m-C Lowpass Filter
K. Boehm, J. Pfau, H. Schnepp, *Daimler Chrysler Research, Ulm, Germany*

T5.7 A New Predistortion Linearizer Using Envelope-Feedback Technique for PCS High Power Amplifier Application
Hyun-Min Park, Dong-Hyun Baek, Kyeik Jeon, Songcheol Hong, *Korea Advanced Institute of Science and Technology (KAIST), Department of Electrical Engineering, Taejon, Korea*

T5.8 A Novel LDMOS Technology Compatible With CMOS and High Q On-chip Inductor for Integrated RF Power Amplifiers
Yue Tan, Mahender Kumar, Johnny K. O. Sin, *Hong Kong University of Science & Technology, Dept. of Electrical & Electronic Eng., Hong Kong, P.R. China*

T5.9 Digital Predistortion Linearizer for Multi-Carrier Spread Spectrum
Junsong Li, Kathleen J. Muhonen, M. Kavehrad, *Pennsylvania State University, Department of Electrical Engineering, University Park, PA, USA*

T5.10 LINC Imbalance Correction Using Baseband Preconditioning
Scott Olson, Bob Stengel, *Florida Communication Research Lab, Motorola Labs, Plantation, FL, USA*

T5.11 Improvement Technique in the C/I Ratio of a High-Power Amplifier Array Using Intermodulation Distortion Controllers
Takana Kaho, Hiroshi Okazaki, Koji Horikawa, Katsuhiko Araki, Takashi Ohira, *NTT Network Innovation Laboratories, Yokosuka, Kanagawa, Japan*

T5.12 New Considerations for Optimization of Signal and Noise Performances of MM-Wave FETs Based on Sliced Modeling
Abdolali Abdipour, Gholamreza Moradi, *Amir-Kabir University of Technology (Tehran Polytechnique), Electrical Engineering Department, Tehran, Iran*

T5.13 A C-Band Low Power High Dynamic Range GaAs MESFET Low Noise Amplifier
Seungyup Yoo, Deukhyoun Heo, Joy Laskar, *Microelectronics Research Center, Georgia Institute of Technology, Atlanta, GA, USA;* Stewart S. Taylor, *TriQuint Semiconductor, Hillsboro, OR, USA*

T5.14 Q-factors of a Ring Dielectric Resonator in an MIC Environment
Juseop Lee, Sang-Ho Lim, Sunha Lee, Young-Sik Kim, *Dept. of Radio Sciences & Engineering, Korea University, Korea*

T5.15 FD-TD Analysis of Mutual Coupling in the Combline Filter Design
Jian Xu, *COM DEV Wireless Group, Moncton, NB, Canada*; Nick van Stigt, *Metocean Data Systems, Dartmouth, NS, Canada*

Hotel and Travel

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Please make your own reservations with the hotel. The conference rate is $95 per night (single or double), plus tax. Rooms will be held only through the cutoff date of July 12, 1999, but the conference rate is offered afterwards if space is available.

The hotel is 26 miles from Denver International Airport and offers free parking. Driving time is 30-45 minutes. SuperShuttle serves this route from 5 am through midnight and offers a discounted $27 round trip if you mention "RAWCON." See **rawcon.org** for full details and directions.

Exhibition

RAWCON'99 includes an Exhibition of wireless products and services on Monday (5 - 7 pm) and Tuesday (7 am - 7 pm). Booth and tabletop spaces may still be available. For information, please check rawcon.org or contact the Exhibition Chair, Mike Fennelly of Roos Instruments, Inc. (m.fennelly@ieee.org or +1-978-258-4101).

Registration Hours

Sunday, August 1
10 am - 4 pm
Monday, August 2
7 am - 6 pm
Tuesday, August 3
7 am - 6 pm
Wednesday, August 4
7 am - noon

MONDAY EVENING PANEL SESSION

BROADBAND WIRELESS ACCESS OPERATOR'S FORUM

Monday, August 2, 1999, 8:30 - 10:00 pm

Organizer and Moderator:

- Roger B. Marks, *National Wireless Electronics Systems Testbed (N-WEST), NIST*

Panelists:

- Ray Nettleton, *Senior Vice President & Chief Technology Officer, Formus Communications, Inc.*
- Lou Olsen, *Director of Technology Development, Teligent, Inc.*
- Peter Soltesz, *Senior Director, Network Architecture & Advanced Technologies, WinStar Communications, Inc.*

The wireless alternative has great worldwide potential as a competitor in the broadband access arena. This panel session will provide a forum for key executives from some of the major international operators of broadband wireless access systems to present and discuss their views of the opportuntites and challenges. The session is a continuation of RAWCON's coverage of broadband wireless access, including the RAWCON'98 panel "LMDS: Jumpstarting the Industry." The session will take place as the after-dinner program of the RAWCON'99 Banquet.

TUESDAY EVENING PANEL SESSION

WIRELESS STANDARDIZATION: PLAYERS, STAKES, AND OPPORTUNITIES

Tuesday, August 3, 1999, 7:00-9:00 pm

Organizers:

- Roger B. Marks, *National Wireless Electronics Systems Testbed (N-WEST), NIST*
- Randall S. Bloomfield, *International Center for Standards Research*

Moderator:

- Randall S. Bloomfield, *International Center for Standards Research*

Panelists:

- Asok Chatterjee, Ericsson, Inc.; *Chair, Technical Subcommittee T1P1 (Wireless/Mobile Services and Systems); Leader of T1 Delegation to 3rd Generation Partnership Project (3GPP)*
- José Costa, *Nortel Networks; Co-Chair, ITU-R Joint Rapporteurs Group 8A/9B (Wireless Access Systems)*
- Robert Heile, *GTE Technology; Chair, IEEE P802.15 (Wireless Personal Area Network Standards)*
- Roger B. Marks, *NIST; Chair, IEEE P802.16 (Broadband Wireless Access Standards)*
- Bob O'Hara, *Informed Technology; Editor, IEEE P802.11 (Wireless Local Area Network Standards)*
- Paola Tonelli, *AirTouch Communications, Inc.; Chair, Operator's Group, UMTS (Universal Mobile Telecommunications System) Forum*

Standardization has always been a multifaceted instrument of economic and technical change and is playing an increasingly significant role in world trade. In the past year, standards for third-generation (3G) wireless communications have been in the forefront of international controversy and have been front-page news. In other areas of wireless, including wireless local area networks, wireless personal area networks, and wireless broadband networks, the approach toward standardization has been quite different from that taken in 3G.

This panel, including leaders of several wireless standardization efforts, will discuss some key challenges, including:

- Is wireless unique in the world of standards?
- Do we need wireless standards?
- What is a "good" standard?
- What are the "best" routes for wireless standardization?
- Should private consortia be involved in standardization?
- How can we encourage cooperation, rather than politicization?
- Does the data communications industry provide good alternative standardization models?

The panel expects to make a significant contribution to international understanding on these and other relevant issues. A discussion session on the topic is open to the public prior to the conference through the Standards Discussion List of the International Center for Standards Research (available from the RAWCON web site). The panelists will seek opportunities to convert their discussion into a report and use the outcome to promote more effective standardization efforts for the benefit of wireless communications.

SUNDAY WORKSHOP

SMART ANTENNA TECHNOLOGY AND APPLICATIONS

Sunday, August 1, 1999, 1 pm - 5 pm

Organizer and Chair:

- Glenn D. Golden, *Bell Laboratories, Lucent Technologies*

Speakers:

- Adrian Boukalov, *Helsinki Univ. of Technology*
- Martin Feuerstein, *Metawave Communications*
- Mark Reudink, *Metawave Communications*
- Paul Mankiewich (or designate), *Bell Laboratories, Lucent Technologies*

Smart antenna technology is promising tremendous improvements in the performance of wireless systems. Groups of transmitters and receivers working in unison completely alter the whole communications picture from top to bottom, introducing radical new concepts like space-division multiple access. The coming technology will impact designers at all levels. This tutorial workshop is designed to provide an interdisciplinary audience with an introduction to the issues and problems of smart antenna technology.

The presentations are directed towards practical applications and lucid explanations of how the technology works. In keeping with the tutorial approach, terms and jargon will be carefully defined. The program will begin with an overview of the wireless propagation environment and its relationship to system parameters. Subsequent talks will provide a clear understanding of the basic techniques of smart antenna technology, defining the set of common wireless communication problems which smart antennas attack in the commercial wireless arena (e.g., range extension, capacity improvement, and site engineering reduction) and the general forms of smart antenna solutions (e.g., diversity combining, beamforming, null steering, and fully-adaptive multipath tracking). Advanced topics will include details on processing algorithms and approaches. The format will provide opportunities for questions and discussion.

MONDAY WORKSHOP

WIRELESS PERSONAL AREA NETWORKS: AN OVERVIEW

Monday, August 2, 1999, 8 am - noon

Organizer and Chair:

- Dr. Robert F. Heile, *GTE Technology Organization; Chair, IEEE P802.15 Working Group on Wireless Personal Area Networks*

Speakers:

- Dr. Robert F. Heile
- Jim Kardach, *Intel Corp.; Program Manager, Bluetooth Special Interest Group*
- Jim Lansford, *Intel Corp.; Technical Committee Chair, HomeRF Working Group*
- additional speakers to be finalized

Wireless Personal Area Networks (PANs) will proliferate in the next millennium. Several competing wireless initiatives are focused on this emerging network area. This half-day workshop will provide attendees with a technical overview of two large industry consortia: the Bluetooth Special Interest Group and the HomeRF Working Group. The workshop will also cover a standardization project: the IEEE P802.15 Working Group on Wireless Personal Area Networks.

REGISTRATION FORM

1999 IEEE Radio and Wireless Conference

August 1-4, 1999
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REGISTRATION FEES

❑ By July 12 ❑ After July 12

Technical Sessions		
❑ IEEE Member	$250	$300
❑ Non-member	$325	$375
❑ IEEE Student Member	$175	$225
❑ Retired IEEE Member	$175	$225
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Optional Workshops (including lunch and notes)		
❑ Workshop, Sunday afternoon	$75	$95
❑ Workshop, Monday morning	$75	$95
Additional Options		
❑ Monday Reception, Banquet, Panel, and Exhibition Only	$50	$60
❑ Tuesday Reception, Panel, and Exhibition Only	$20	$25
❑ Additional copy of Proceedings (on-site pickup only)	$70	$90
❑ Guest Registration (meals only)	$125	$135

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- Admission to two and a half days of oral technical sessions
- Admission to exhibition, poster sessions, and two evening panel sessions
- Proceedings book with about 75 four-page papers
- Meals (banquet on Monday evening; breakfast and lunch on Tuesday and Wednesday)
- Monday and Tuesday evening receptions
- Five refreshment breaks

CANCELLATIONS

Cancellations will be refunded less a $50 processing fee only if written notice is postmarked on or before July 12, 1999.

HOUSING

Accommodations should be secured directly with the Denver Marriott Southeast at 303-758-7000. You may also fax your request to 303-691-3418, including name, address, fax number, arrival date, number of nights, conference name (RAWCON'99), credit card name, credit card number, and expiration date. Rates are $95 (single or double occupancy) plus tax (currently 11.8%). Rooms are reserved through July 12, 1999, but the conference rate is offered afterwards on a space-available basis.

MAIL THIS FORM TO:

RAWCON'99, c/o ITCMS, Attn: Beth Giaimo, 445 Hoes Lane, Piscataway, NJ 08855-1331
OR Fax this form to: +1-732-981-1203
Questions concerning your registration?
Contact Beth Giaimo: E-Mail: e.giaimo@ieee.org
Phone: +1-732-562-6346 or 1-800-810-4333

ADDITIONAL INFORMATION

Visit our web site at http://rawcon.org

MESSAGE FROM THE GENERAL CHAIR

As this Advance Program reflects, the IEEE Radio and Wireless Conference continues to grow in stature and significance. I have a simple explanation for our success: RAWCON has maintained its unique focus on the multidisciplinary aspects of wireless communications. Wireless technology is not about networking, radio-frequency electronics, antennas, propagation, or digital signal processing. Instead, it is about how all of these aspects interact and function as a system. Since few of our institutions—whether academic, professional, or industrial—take the multidisciplinary approach, most working engineers find themselves struggling to grasp the big picture. The RAWCON convergence provides a look at how all the pieces fit. Here's how:

* Our technical program emphasizes multidisciplinary work that integrates facets of many technologies, particularly at the intersections of radio-frequency and communications engineering.
* Our single-track oral program puts all of us in a room together, rather than splitting us into narrowly-focussed sessions.
* Our supplemental programming, including poster sessions, interactive panel sessions, product exhibitions, receptions, and meals, are open to the whole group and are designed to promote interactions among disparate technology specialists and between customer and vendor.

Take a look at this program and you'll see that RAWCON moves at the speed of the wireless industry. You'll see first-class technical topics selected by our superb international Technical Program Committee. These world-class presentations were among the 65% of submitted papers that we could accommodate. Plus:

* Our Keynote Address by Dale Hatfield, Chief of the Office of Engineering and Technology at the U.S. Federal Communications Commission. Dale's influence over our industry is matched by his superb technical and business understanding of it.
* A post-Banquet Panel Forum on Broadband Wireless Access, featuring key executives from three of the few companies that are currently providing that service.
* A Panel Discussion Session on Wireless Standards, one of the great unknowns that can make or break technology and that we must came to understand and master.
* Tutorial workshops, featuring renowned experts, on two very hot topics: (1) smart antenna technology, which may completely redefine wireless systems; (2) wireless personal area networks, like Bluetooth and HomeRF, that may soon become commonplace consumer gear.
* An exhibition offering close-up access to the latest in wireless equipment and services, rescheduled this year to include two evening sessions.

This year, RAWCON moves to Denver, an exciting metropolis for in-town excitement and mountain ventures as well as a telecommunications capital. The fine Denver Marriott Southeast is a full-service venue that will accommodate all of your needs. Make sure to reserve your room before the July 12 cutoff date. The same deadline is your last chance for discounted early registration. Please take advantage of our exceptionally quick and easy, and fully secure, on-line registration service. You'll note that, for the third consecutive year, we have lowered fees by $50; we will also now include the Panel Sessions without an extra fee. Just like in wireless, the customer benefits from economies of scale.

Keep an eye on **rawcon.org** for the latest updates and further details on the sessions as well as helpful conference and travel information. You can also sign up there for the RAWCON email list, which will bring you all the late-breaking news. Don't hesitate to contact any of the dedicated Steering Committee members between now and August if you have any ideas on how we can make RAWCON'99 even better for you and for our community.

I'm looking forward to seeing you in August. Rock On!

—Roger

RAWCON 99

The Institute of Electrical and Electronics Engineers, Inc.
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